REMARKS

Applicant has carefully reviewed the Advisory Action mailed August 30, 2007 and the Final Office Action mailed February 28, 2007 and offers the following remarks to accompany the above amendments.

Applicant wishes to thank the Examiner for indicating that claims 7-9, 19, and 24 would be allowable if rewritten in independent form. Applicant reserves the right to rewrite claims 7-9, 19, and 24 at a later time.

Claims 1-6, 10-18, and 20-23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,700,895 B1 to Kroll (hereinafter "Kroll") in view of U.S. Patent No. 6,975,629 B2 to Welin (hereinafter "Welin"). To establish *prima facie* obviousness, the Patent Office must show where each and every element of the claim is taught or suggested in the combination of references. MPEP § 2143.03. If the Patent Office cannot establish obviousness, the claims are allowable.

The present invention is directed to an apparatus and method of optimizing voice quality on a network having end-point devices. The invention includes initializing default parameters for the end-point devices with respect to choice of preferred CODEC, number of voice samples per IP packet, and jitter buffer size. Further, performance parameters of the network are measured and if the connection to the network is below a desired level, the default parameters are adjusted. The adjustment of the default parameters may involve re-negotiating a CODEC connection, re-setting the packet size, and/or re-setting the jitter buffer size. Thus, one embodiment of the present invention is a three-phase approach to optimize a VoIP connection, by initializing default parameters, measuring or monitoring network performance, and dynamically intervening or adjusting the default parameters.

In one embodiment of the invention, the initialization phase begins when the end-point device registers with the network (such as by registering with a private branch exchange (PBX) on the network), and a number of tests may be performed to determine the optimum configuration for that end-point. For example, a ping tool, a network trace tool, and/or a packet loss measurement tool may be used to measure network bandwidth, the number of network hops to the end-point, the round trip delay and/or the packet loss over a short period of time. These measurements may be used to obtain the necessary information for selection of the optimum default settings for the given end-points.

Once the optimum configuration for the end-point devices is determined via the tests, the next phase is periodically measuring the network performance of the network, which is external to the end-point devices. The network performance measurements may also be performed by the use of a ping tool, a network trace tool, or a packet loss measurement tool. If the network performance is below a desired level, the steps used for initialization may be repeated in order to re-optimize the network. This may be done automatically or at the request of an end-point device.

Applicant has amended claims 1, 14, and 20 in order to more clearly define the present invention. The independent claims as amended clarify that the initializing step includes setting default parameters for the end-point devices and performing one or more tests to determine the optimum configuration for the end-point devices. The independent claims have also been amended to clarify that the measuring of performance parameters is of the network itself; that is, parameters external to the end-point devices are measured in order to evaluate whether the default parameters for the end-point devices are to be adjusted.

As an example, claim 1 as amended recites a method of voice optimization in a packet switched network, comprising:

initializing end-point devices on a network, wherein the initializing comprises setting default parameters for the end-point devices with respect to choice of preferred CODEC, number of voice samples per packet, and jitter buffer size, and performing one or more tests to determine an optimum configuration for the end-point devices;

measuring performance parameters of the network external to the end-point devices; and

evaluating whether the measured performance parameters signify that a connection to the network is below a desired level of operation and, if so, adjusting the default parameters for the end-point devices based on the evaluating.

Independent claims 14 and 20 have been amended in a similar fashion.

The combination of Kroll and Welin does not teach each and every limitation of the claims as amended. The Patent Office admits that Kroll does not teach initializing default parameters with respect to preferred CODEC and number of voice samples per packet, and cites to Welin, col. 18, lines 4-14 to correct this deficiency of Kroll (Final Office Action mailed February 28, 2007, pp. 2-3). However, neither Kroll nor Welin teaches or suggests "initializing end-point devices on a network, wherein the initializing comprises setting default parameters for

the end-point devices with respect to choice of preferred CODEC, number of voice samples per packet, and jitter buffer size, and **performing one or more tests to determine an optimum configuration for the end-point devices**." There is no mention in Kroll or Welin of an initializing step where default parameters for the end-point devices are set and then one or more tests are performed to determine the optimum configuration for the end-point devices.

In Kroll, there really is no "initializing" step performed at all. The process just starts with a particular buffer size (Kroll, Figure 7, step 210). Then the average queue time for a frame is calculated, and the expected arrival times are determined (Kroll, Fig. 7, steps 212 and 214). The frame loss rate is calculated by considering the frames that arrive late, frames that are lost in the network and frames that overflow due to an arriving burst of frames (Kroll, Fig. 7, steps 220-280). The frame loss rate is then used to select the optimal size of the jitter buffer (Kroll, col. 2, lines 36-45). Thus, Kroll does not teach or suggest "initializing end-point devices on a network, wherein the initializing comprises setting default parameters for the end-point devices with respect to choice of preferred CODEC, number of voice samples per packet, and jitter buffer size, and **performing one or more tests to determine an optimum configuration for the end-point devices**." Kroll does not teach performing tests to determine an optimum configuration for the end-point devices. In addition, Kroll is only concerned with selecting the size of a jitter buffer and not the optimum configuration of end-point devices.

Further, Kroll does not teach performing one or more tests to determine an optimum configuration for the end-point devices, and then measuring the performance parameters of the network external to the end-point devices in order to see if any adjusting of the initial default parameters is necessary, as claimed by the present invention. As mentioned above, Kroll does not perform tests in order to determine an optimum configuration for the end-point devices. Moreover, Kroll does not measure performance parameters of the network external to the end-point devices. Instead, Kroll measures the frame loss rate based on past frame loss for a particular buffer size (Kroll, col. 3, line 44 through col. 4, line 5). Thus, what Kroll is retrieving and using to select the size of the jitter buffer (past frame loss based on past packet arrival statistics) is different than what the present invention is using (the measurement of performance parameters of the network external to the end-point devices) to determine if the default parameters for the end-point devices need adjusting.

As a result, Kroll also does not teach or suggest "evaluating whether the measured performance parameters signify that a connection to the network is below a desired level of operation and, if so, adjusting the default parameters for the end-point devices based on the evaluating," as claimed in the present invention. Kroll uses the past frame loss based on past packet arrival statistics to determine the size of the jitter buffer. Kroll looks to see if a particular buffer size yields a desired frame loss rate (Kroll, Figure 6, step 194). Kroll thus does not use the measurement of performance parameters of the network external to the end-point devices to evaluate whether **a connection to the network** is below a desired level, as claimed in the present invention

Thus, as set forth above, Kroll does not teach or suggest "initializing end-point devices on a network, wherein the initializing comprises setting default parameters for the end-point devices with respect to choice of preferred CODEC, number of voice samples per packet, and jitter buffer size, and performing one or more tests to determine an optimum configuration for the end-point devices," "measuring performance parameters of the network external to the end-point devices," and "evaluating whether the measured performance parameters signify that a connection to the network is below a desired level of operation and, if so, adjusting the default parameters for the end-point devices based on the evaluating," as claimed in the present invention.

Welin does not cure the deficiencies of Kroll. Welin was cited merely for its teaching of selecting coders at run time (Welin, col. 18, lines 4-14). Welin is directed to a method of processing first and second record packets of real-time information, the method including computing for each packet a deadline interval and ordering processing of the packets according to the respective deadline intervals. There is no teaching or suggestion in Welin of "initializing end-point devices on a network, wherein the initializing comprises setting default parameters for the end-point devices with respect to choice of preferred CODEC, number of voice samples per packet, and jitter buffer size, and **performing one or more tests to determine an optimum configuration for the end-point devices**," "measuring performance parameters of the network external to the end-point devices," and "evaluating whether the measured performance parameters signify that a connection to the network is below a desired level of operation and, if so, adjusting the default parameters for the end-point devices based on the evaluating," as recited in claim 1.

For the reasons stated above, the combination of Kroll and Welin does not teach the invention as presently claimed. Therefore, claim 1 is allowable over Kroll and Welin. Claims 2-13 depend from claim 1 and are patentable for at least the same reasons set forth above with respect to claim 1.

Independent claims 14 and 20 as amended include limitations that are the same or similar to those in claim 1 and are thus patentable for at least the same reasons set forth above with respect to claim 1. Claims 15-19 and 21-24 depend from claims 14 and 20, respectively, and are allowable over Kroll and Welin for at least the same reasons.

The present application is now in condition for allowance and such action is respectfully requested. The Examiner is encouraged to contact Applicant's representative regarding any remaining issues in an effort to expedite allowance and issuance of the present application.

Respectfully submitted,
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